

We claim:

1. (Amended) A self cleaning litter box for use with a ~~non-attached~~ removable litter cartridge, the self cleaning litter box comprising:

a housing assembly configured to receive a removable litter cartridge;

a rake assembly including a rake for combing through said removable litter cartridge during a cleaning stroke from a home position to a waste position during a cleaning stroke and returning to said home position during a return stroke;

a chassis assembly for carrying said rake assembly, said chassis also configured to enable said rake to communicate with an interior portion of said ~~non-attached~~ removable litter cartridge when said chassis assembly is placed over said removable litter cartridge, said chassis assembly carried by said housing assembly.

2. (Currently Amended) The self-cleaning litter box as recited in claim 1, wherein said removable litter cartridge, includes a cover hinged on one end.

3. (Currently Amended) The self-cleaning litter-box as recited in claim 1, wherein said rake assembly, wherein said housing assembly, said chassis assembly and said rake assembly is configured ~~and said drive assembly is configured to travel in a single plane.~~ so that said rake assembly is translated along a horizontal path during a cleaning stroke and a return stroke.

4. (Previously Presented) A rake assembly for a self-cleaning litter box, the rake assembly comprising:

a frame for carrying a plurality of spaced apart tines, said tines configured as flexible members.

5. (Previously Presented) The rake assembly as recited in claim 4, wherein said tines are formed from metal.

6. (Previously Presented) The rake assembly as recited in claim 5, wherein said tines are configured in a loop.

7. (Previously Presented) The rake assembly as recited in claim 4, wherein each pair of tines comprise a U-shaped length of material.

8. (Previously Presented) A litter cartridge, the litter cartridge comprising:

A tray for receiving litter, one end portion of said tray defining a waste area ; and
a waste cover adapted to cover said waste area.

9. (Previously Presented) The litter cartridge as recited in claim 8, wherein said waste cover is adapted to be rotatably mounted on one end to said tray.

10. (Previously Presented) The litter cartridge as recited in claim 8, wherein said litter cartridge is configured to be disposable after a single use.

11. (Previously Presented) The litter cartridge as recited in claim 8, wherein said litter cartridge is configured with a separate waste compartment.

12. (Previously Presented) The self-cleaning litter box as recited in claim 10, wherein said cartridge is formed from paper.

13. (Currently Amended)) A self-cleaning litter box assembly for use with a removable litter cartridge: comprising:

a housing assembly with an open bottom for receiving a removable litter cartridge;

a rake assembly which includes a rake for combing through said litter cartridge during a cleaning stroke from a home position to a waste position for raking waste to said waste position during a cleaning stroke and thereafter during a return stroke returning to said home position;

a drive assembly for driving said rake assembly; and

a chassis assembly for carrying said rake assembly and said drive assembly, said drive assembly and said chassis assembly being carried by said housing assembly.

14. (Currently Amended)) The self-cleaning litter box as recited in claim 13, wherein said removable litter cartridge includes a pivotally mounted cover adjacent one end and further including a lift arm said chassis assembly is configured to lift a cover said pivotally mounted cover attached to said removable litter cartridge as said rake assembly approaches said waste end and is further configured to enable said cover to lower said cover as said rake assembly moves away from said waste end.

15. (Currently Amended) The self-cleaning litter box as recited in claim, 13, wherein said rake assembly includes a pivotable wire frame that defines a pivot axis and a plurality of tines coupled to said wire frame and wherein said litter box assembly is configured to carry said rake assembly so that the vertical height of said rake assembly pivot axis is constant during a cleaning stroke.

16. (Previously Presented) The self-cleaning litter box as recited in claim 13, wherein said rake assembly includes a plurality of tines and said tines are elevated relative to said litter cartridge at said home end.

17. (Previously Presented) The self-cleaning litter box as recited in claim 13, wherein said rake assembly is lowered as said rake assembly moves away from said home end.

18 (Previously Presented) The litter cartridge as recited in claim 9, wherein said litter tray is re-usable.

19. (Previously Amended) The self-cleaning litter box as recited in claim 13, wherein said chassis assembly is configured to carry said rake assembly so that the vertical height of said rake assembly varies during a return stroke as said rake assembly is moved from said home end to said waste end.

20. (Previously Presented) The self-cleaning litter box as recited in claim 19, wherein said rake assembly includes a plurality of generally coplanar tines and said chassis assembly and said rake assembly are configured to enable said plurality of generally coplanar tines to tilt relative to a vertical plane.

21 (Previously Presented) The self-cleaning litter box as recited in claim 19, wherein said chassis assembly and said rake assembly are configured to enable said plurality of generally coplanar tines to tilt relative to a vertical plane without lateral movement.

22 (Currently Amended) A self cleaning litter box assembly for automatically cleaning a separate removable litter cartridge containing litter, the self-cleaning box assembly comprising:

a housing assembly with an open bottom for receiving a removable litter cartridge
a rake assembly which includes a rake with a plurality of tines, said rake configured to be received in said ~~separate litter cartridge and disposed over said~~

~~separate litter box~~ removable litter cartridge when said removable litter cartridge is received in said housing assembly and comb through said litter cartridge during a cleaning stroke from a home position and move waste to a waste position of said separate litter cartridge and to return to said home position during a return stroke;

a drive assembly for driving said rake assembly; and

a chassis assembly for carrying said rake assembly, said chassis configured to carry said rake assembly over said separate litter cartridge.

23. (Currently Amended) The self-cleaning litter box assembly as recited in claim 22, wherein said self-cleaning litter box assembly is configured to enable it to be lifted vertically to remove said ~~separate~~ removable litter cartridge.

24. (Currently Amended) The self-cleaning litter box assembly as recited in claim 22, wherein said housing assembly includes a pivotally mounted lid at one end and said chassis assembly includes a lid lifting mechanism for lifting a hinged said lid .

25. (Currently Amended) The self-cleaning litter box assembly as recited in claim 24, wherein said removable cartridge includes a pivotally mounted cover at one end and said lid and said cover are configured such that lifting said lid by said lid lifting mechanism causes said cover on said removable litter cartridge to be lifted by magnetic forces ~~includes a magnet configured to co-operate with metal configured in said lid~~ .

26. (Previously Presented) The self-cleaning litter box assembly as recited in claim 22, wherein said rake includes a wire frame to which said tines are secured forming a rake assembly.

27. (Previously Presented) The self-cleaning litter box assembly as recited in claim 26, wherein said rake assembly is pivotal about a pivot axis defined by said wire frame.

28. (Previously Presented) The self-cleaning litter box assembly as recited in claim 26, wherein said rake assembly is mounted so that it is tilted with respect to the vertical during a cleaning stroke.

29. (Previously Presented) The self-cleaning litter box assembly as recited in claim 22, wherein each pair of said tines are configured in a U-shape.

30. (Previously Presented) The self-cleaning box assembly as recited in claim 22, wherein each tine is configured from steel wire.

31. (Previously Presented) The self-cleaning litter box assembly as recited in claim 22, wherein said drive assembly includes a single drive motor and mechanism coupled thereto and coupled to said rake assembly for causing linear movement of said rake assembly relative to said chassis assembly.

32. (Previously Presented) The self-cleaning litter box assembly as recited in claim 31, wherein said mechanism includes at least one lead screw.

33. (Previously Presented) The self-cleaning litter box assembly as recited in claim 31, wherein said chassis assembly and said rake assembly are configured so that said drive motor also causes rotation of said rake about a predetermined pivot point.

34. (Previously Presented) The self-cleaning litter box assembly as recited in claim 33, wherein said predetermined pivot point includes at least one stop configured in said chassis assembly.

35. (Previously Presented) The self-cleaning litter box assembly as recited in claim 34, wherein a waste area is disposed adjacent to said one end and translation of said rake causes any collected waste during a cleaning stroke to be disposed into said waste area.

36. (Previously Presented) The self-cleaning litter box assembly as recited in claim 22 wherein said rake is configured with a wire frame and a plurality of tines connected thereto on one end, the spacing of said tines along said wire frame being selected to be larger than the particle size of the litter to be used in the separate litter cartridge.

37. (Previously Presented) The self-cleaning litter box assembly as recited in claim 36, wherein the spacing between adjacent tines is selected to be 3-20 millimeters.

38. (Previously Presented) The self-cleaning litter box assembly as recited in claim 22, wherein said rake assembly includes a plurality of tines and wherein the chassis assembly and said rake assembly are configured so that the bottom of the tines is below the normal litter level in said home position.

39. (Previously Presented) The self-cleaning litter box assembly as recited in claim 22, wherein said chassis assembly and said drive assembly are configured as a labyrinth seal to prevent litter from entering said drive assembly.

40. (Currently Amended) A self cleaning litter box assembly for automatically cleaning a removable ~~separate~~ litter cartridge containing litter, the self-cleaning litter box assembly comprising:

a housing assembly configured to receive a removable litter cartridge;

a rake assembly which includes a rake with a plurality of tines, said rake configured to be received in said ~~separate~~ removable litter cartridge and disposed over said ~~separate~~ removable litter cartridge and comb through said removable litter cartridge during a cleaning stroke from a home position and move waste to a waste position of said ~~separate~~ removable litter cartridge and to return to said home position during a return stroke;

a drive assembly, carried by said housing assembly, said drive assembly including a drive motor for driving said rake assembly, said rake assembly configured to enable said rake to pivot to a first predetermined angle relative to a vertical axis during a cleaning stroke under the influence of said drive motor ; and

a chassis assembly, carried by said housing assembly, said chassis assembly for carrying said rake assembly, said chassis assembly configured to carry said rake assembly over said ~~separate~~ removable litter cartridge,

41. (Previously Presented) The self-cleaning litter box assembly as recited in claim 40, wherein said rake assembly is configured to enable said rake to pivot a second predetermined angle relative to a vertical axis during a return stroke under the influence of said drive motor.

42. (Previously Presented) The self-cleaning litter box assembly as recited in claim 41, wherein the magnitude of said first and second predetermined angles are equal.

43. (Previously Presented) The self-cleaning litter box assembly as recited in claim 41, wherein at least one of said first predetermined angle and said second predetermined angle is in the range of 0° to 45°.

44. (Currently Amended) A self cleaning litter box assembly for automatically cleaning a separate removable litter cartridge containing litter, the self-cleaning litter box assembly comprising:

a housing assembly configured to receive a removable litter cartridge;

a rake assembly which includes a rake with a plurality of tines, said rake configured to be received in said separate litter cartridge and disposed over said separate litter cartridge and comb through said litter cartridge during a cleaning stroke from a home position and move waste to a waste position in said separate litter cartridge and to return to said home position during a return stroke;

a drive assembly including a drive motor for driving said rake assembly, said drive assembly carried by said housing assembly and further configured to enable said rake to pivot to a first predetermined angle relative to a vertical axis to an angled position and to travel during a cleaning stroke at said angled position under the influence of said drive motor; and

a chassis assembly for carrying said rake assembly, said chassis assembly configured to carry said rake assembly over said removable separate litter cartridge, wherein said rake assembly and said drive assembly are configured so that said rake rotates at said waste position under the influence of said drive motor during a return stroke.

45. (Currently Amended) A self cleaning litter box assembly as recited in claim 44, wherein said rake assembly and said drive assembly are configured so that said rake

rotates a sufficient amount to dump any collected waste into a waste compartment disposed adjacent said waste position.

46. (Currently Amended) A self cleaning litter box assembly for automatically cleaning a removable litter cartridge containing litter, the self-cleaning box assembly comprising:

a removable litter cartridge ~~configured with a single compartment;~~

a side rail assembly including two spaced apart side rails that are adapted to rest on a generally flat surface and configured to receive ~~adjacent to~~ said removable litter cartridge disposed therebetween;

a rake assembly which includes a rake with a plurality of tines, said rake assembly carried by said spaced apart side rails and configured to be received in said removable litter cartridge and comb through said removable litter cartridge during a cleaning stroke from a home position and move waste to a waste area of said removable litter cartridge and to return to said home position during a return stroke; and

a drive assembly for driving said rake assembly from an initial home position to a waste position during a forward stroke and back to a home position during a return stroke.

47. (Previously Presented) The self-cleaning litter box as recited in claim 46, wherein said removable cartridge is configured with a hinged lid on one end for covering waste.

48. (Currently Amended) The self-cleaning litter box as recited in claim 47, further including a mechanism for lifting said hinged lid during a forward stroke and enabling said hinged lid to return to a closed position during a return stroke.

49. (Previously Presented) The self-cleaning litter box as recited in claim 46, wherein said self-cleaning litter box is configured so that said rake assembly does not change the vertical position during a forward and return stroke.

50. (Previously Presented) The self-cleaning litter box as recited in claim 46, wherein said rake is rotatably mounted.

51. (Previously Presented) The self-cleaning litter box as recited in claim 50, further including a mechanism for causing said rake to rotate without horizontal translation at said home position.

52. (Previously Presented) The self-cleaning litter box as recited in claim 46, further including a top housing for protecting said side rails and said drive assembly from contamination.

53. (Previously Presented) The self-cleaning litter box as recited in claim 52, wherein said top housing forms a labyrinth seal but allows translation of said rake assembly.

54. (Currently Amended) The self-cleaning litter box as recited in claim 46, wherein said side rails are spaced apart to enable said self-cleaning litter box to lifted vertically to enable said removable litter cartridge to be removed.

55. (Previously Presented) The self-cleaning litter box as recited in claim 46, wherein said removable litter cartridge includes a hinged flap on one end for covering waste in said waste area.

56 (Previously Presented) The self-cleaning litter box as recited in claim 46, wherein said self-cleaning litter box is configured to stand on end.

57 (Currently Amended) A method for treating waste in a kitty litter box comprising the steps of

(a) providing a kitty litter box with a cover over a portion thereof defining a waste area, said kitty litter box being non-compartmentalized;

(b) configuring said kitty litter box to automatically move waste to said waste area; and

(c) configuring said kitty litter box to automatically cover said waste area

58 (Previously Presented) A litter cartridge as recited in claim 8 further including litter .

59. (Previously Presented) A litter cartridge as recited in claim 8 further including a storage cover.

60. (Previously Presented) A litter cartridge as recited in claim 8 wherein said waste cover is configured to be installed on said tray by an end user.

61. (Previously Presented) A litter cartridge as recited in claim 60 wherein said waste cover is configured to be rotatably mounted on said tray by an end user.

62. (Previously Presented) The litter cartridge as recited in claim 8, wherein said cartridge is formed from plastic.

63. (Previously Presented) The litter cartridge as recited in claim 8, wherein said cartridge is formed from cardboard.

64. (New) A self cleaning litter box for use with a litter cartridge having a litter compartment and a separate waste compartment, the self cleaning litter box comprising:

- a housing assembly;

- a rake assembly including a plurality of tines coupled to a frame for combing through said litter compartment; and

- a chassis assembly, carried by said housing assembly, said chassis assembly for carrying said rake assembly,

- a drive assembly, carried by said housing assembly, for driving said chassis assembly during a cleaning stroke from a home position to a waste position during a cleaning stroke and returning to said home position during a return stroke;

- a waste cover pivotally mounted to said housing assembly, adjacent said waste compartment,

- a lifting arm assembly configured to lift said waste cover as said rake assembly approaches the waste position to enable waste to be deposited in the waste compartment and allow said cover to close as said rake assembly moves toward said home position.

65. (New) A self cleaning litter box for use with a litter tray defining a home position on one end and a waste position on an opposing end, the self cleaning litter box comprising:

- a housing assembly;

- a rake assembly including a plurality of tines for combing through said litter cartridge;

- a chassis assembly for carrying said rake assembly; and

a drive assembly, carried by said chassis assembly, for driving said rake assembly during a cleaning stroke from a home position to a waste position during a cleaning stroke and returning to said home position during a return stroke, wherein said drive assembly includes an electric motor having at least one drive shaft, said electric motor being mounted to said chassis assembly, said housing assembly for housing said chassis assembly.

66. The self-cleaning litter box as recited in claim 65, wherein said electric motor is reversible.

67. (New) The self-cleaning litter box as recited in claim 66, further including a first limit switch having at least two states, disposed adjacent waste position, said first limit switch disposed to change states when said chassis assembly reaches said waste position.

68. (New) The self-cleaning litter box as recited in claim 66, wherein said drive assembly includes a controller, said controller configured to cause said electric motor to reverse directions when said first limit switch changes states due to said chassis assembly reaching said waste position.

69. (New) The self-cleaning litter box as recited in claim 68, further including a second limit switch having at least two states, disposed adjacent home position, said second limit switch disposed to change states when said chassis assembly reaches said home position.

70. (New) The self-cleaning litter box as recited in claim 69, wherein said controller is configured to cause said electric motor to reverse directions when said second limit switch changes states due to said chassis assembly reaching said home position.

71. (New) The self-cleaning litter box assembly as recited in claim 65, wherein said electric motor is mounted such that said drive shaft is generally perpendicular to the direction of travel of said chassis assembly.

72 (New) The self cleaning litter box as recited in claim 71, wherein said drive assembly includes at least one lead screw assembly, said lead screw assembly coupled to said drive shaft and said chassis assembly for driving said chassis assembly from said home position to said waste position during a cleaning stroke and from a waste position to a home position during a return stroke.

73 (New) The self cleaning litter box as recited in claim 72, wherein said drive assembly includes a worm gear assembly mechanically coupled between said drive shaft and said lead screw assembly for coupling the output power from said drive shaft to said lead screw assembly.

74. (New) The self-cleaning litter box assembly as recited in claim 65, wherein said drive assembly and said rake assembly are configured to provide movement of said chassis assembly along a linear path during a cleaning stroke and a return stroke.

75. (New) A self cleaning litter box for use with a litter cartridge defining a home position on one end and a waste position on an opposing end, the self cleaning litter box comprising:

- a housing assembly;
- a rake assembly including a plurality of tines for combing through said litter cartridge;
- a chassis assembly for carrying said rake assembly; and

a drive assembly, carried by said chassis assembly, for driving said rake assembly during a cleaning stroke from a home position to a waste position during a cleaning stroke and returning to said home position during a return stroke, wherein said rake assembly includes a plurality of U-shaped tines coupled to a wire frame, said housing assembly for housing said chassis assembly.

76 (New) The self-cleaning litter box assembly as recited in claim 75, wherein said U-shaped tines are uniform.

77 (New) The self-cleaning litter box assembly as recited in claim 75, wherein the spacing between said U-shaped tines is uniform.

78. (New). The self-cleaning litter box assembly as recited in claim 75, wherein said tines are formed from cylindrical metal wire.

79 (New) A self cleaning litter box for use with a litter cartridge defining a home position on one end and a waste position on an opposing end, the self cleaning litter box comprising:

- a housing assembly;

- a rake assembly including a plurality of tines for combing through said litter cartridge;

- a chassis assembly for carrying said rake assembly; and said drive assembly for driving said rake assembly during a cleaning stroke from a home position to a waste position during a cleaning stroke and returning to said home position during a return stroke, wherein housing assembly is configured as a labyrinth seal relative to said litter cartridge and wherein said drive assembly and components thereof are disposed relative to said labyrinth seal to be protected from litter in said litter cartridge.

80 (New) A self cleaning litter box for use with a litter cartridge configured to receive litter up to a litter level, the self cleaning litter box comprising:

a housing assembly configured to receive a litter cartridge;

a rake assembly including a pivotable rake defining a pivot axis for combing through said litter cartridge during a cleaning stroke from a home position to a waste position during a cleaning stroke and returning to said home position during a return stroke;

a chassis assembly for carrying a portion of said rake at a uniform height during said cleaning stroke and said return stroke, said chassis assembly configured to maintain said pivot axis below said litter fill line when said chassis assembly is placed over said litter cartridge

81(New) The self-cleaning litter box as recited in claim 80, wherein said rake is pivotally mounted about a pivot axis.

82 (New) The self-cleaning litter box as recited in claim 80, wherein said chassis assembly is configured to maintain said pivot axis at a uniform height during said cleaning stroke and said return stroke.

83 (New) The self-cleaning litter box as recited in claim 80, wherein said chassis assembly is configured to maintain said pivot axis at said uniform height at a home position.

84 (New) The self-cleaning litter box as recited in claim 80, wherein said chassis assembly is configured to maintain said pivot axis at said uniform height at a waste position.

85 (New) The self-cleaning litter box as recited in claim 81, wherein said rake is mounted so that movement of said rake during a cleaning stroke causes said rake to pivot about said pivot axis in a first direction.

86 (New) The self-cleaning litter box as recited in claim 85, wherein said rake is mounted so that movement of said rake during a return stroke causes said rake to pivot about said pivot axis in a second direction opposite said first direction

87 (New) The self-cleaning litter box as recited in claim 80, wherein said pivot axis is below said litter fill line.

88.(New) A self-cleaning litter box assembly for use with a litter cartridge defining a litter fill line, said self-cleaning litter box assembly: comprising:

- a housing assembly with an open bottom for receiving a litter cartridge;
- a rake assembly which includes a rake for combing through said litter cartridge during a cleaning stroke from a home position to a waste position for raking waste to said waste position during a cleaning stroke and thereafter during a return stroke returning to said home position;

- a drive assembly for driving said rake assembly; and
- a chassis assembly for carrying said rake assembly and said drive assembly, said drive assembly and said chassis assembly being carried by said housing assembly.; wherein said rake assembly includes a wire frame and a plurality of tines coupled to said wire frame and wherein said litter box assembly is configured to carry said rake assembly so that at least a portion of the tines remain below said litter fill line during a return stroke.

89. A self-cleaning litter box assembly for use with a litter cartridge defining a litter fill line, said self-cleaning litter box assembly: comprising:

- a housing assembly with an open bottom for receiving a litter cartridge;
- a rake assembly which includes a rake with a plurality of tines for combing through said litter cartridge during a cleaning stroke from a home position to a waste

position for raking waste to said waste position during a cleaning stroke and thereafter during a return stroke returning to said home position;

a drive assembly for driving said rake assembly; and

a chassis assembly for carrying said rake assembly and said drive assembly, wherein at least a portion of said tines remain below said litter level in a home position.

90. (New) The litter cartridge as recited in claim 8, wherein said tray is configured as a single compartment.

91. (New) The litter cartridge as recited in claim 8, wherein said tray is configured with a litter compartment and a waste compartment.